

## **REMARKS**

### **INTRODUCTION**

In accordance with the foregoing, the specification and claims 1, 3 and 10 have been amended. Claims 2, 7, 9 and 11-22 have been cancelled. Claims 1, 3-6, 8 and 10 are pending and under consideration.

### **OBJECTION TO THE SPECIFICATION**

The specification was objected to because of informalities in paragraphs [0035], [0037], and [0041].

Regarding claim [0035], this paragraph is directed to Figure 6B showing the input waveform of the voltage comparator 11 when a center point of the upper core 4a (upper core origin) passes a middle point (coil origin) between the first sensor coil 2a and the second sensor coil 2b (coil origin). As figure 6B and paragraph [0035] are not directed to when the upper core passes the middle point, but rather to the waveform of the voltage comparator 11, it is respectfully submitted that paragraph [0035] is acceptable in its present form.

Regarding paragraph [0037], appropriate correction has been made to this paragraph to replace the word "inclined."

Regarding paragraph [0041], this paragraph is directed to when the output  $V_o$  of the voltage comparator 11 is at the second zero point during the compression stroke of the piston and the piston is at a top origin position and further the top origin position is also passed during an extension stroke. It is respectfully submitted that paragraph [0041] adequately shows the output  $V_o$  of the voltage comparator 11 extension and compression strokes. For a description on how top dead center is calculated, please refer to paragraphs [0044] – [0048].

Withdrawal of the foregoing objections is requested.

### **CLAIM REJECTIONS – 112, first paragraph**

Claims 6-22 were rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement. Regarding claims 6, 8 and 10, as noted in the Office Action, the specification shows how to measure a time it takes a core to pass a particular point twice. Paragraphs [0044] – [0048] of the specification contain enabling disclosure of how to calculate top dead position.

Claims 7, 9 and 11-22 have been cancelled.

Withdrawal of the foregoing rejection is requested.

**CLAIM REJECTIONS – 112, second paragraph**

Claims 1-10 and 15-22 were rejected under 35 USC 112, second paragraph, as being indefinite.

Regarding claims 1-10, appropriate correction has been made to claim 1 in accordance with the Examiner's suggestion. Claims 2, 7 and 9 have been cancelled. Claims 3-6, 8 and 10 depend on claim 1 and are therefore believed to be definite for the foregoing reason.

Claims 15-22 have been cancelled.

Withdrawal of the foregoing rejection is requested.

**CLAIM REJECTIONS – 101**

Claims 1-22 were rejected under 35 USC 101 because the claimed invention lacks patentable utility.

As previously discussed, paragraphs [0044] – [0048] of the specification contain enabling disclosure of how to calculate top dead position using the two cores of the present invention. As such it is respectfully submitted that claims 1, 3-6, 8 and 10 have patentable utility. Claims 2, 7, 9 and 11-22 have been cancelled.

Withdrawal of the foregoing rejection is requested.

**CLAIM REJECTIONS – 102 and 103**

Claims 1-3 were rejected under 35 USC 102(b) as being anticipated by Shimizu et al. (US 4,804,913).

Claims 15, 18 and 19 were rejected under 35 USC 103(a) as being unpatentable over Uchida et al. (US 4,966,533).

**Claims 1-3**

Independent claim 1 recites: "...a core combined to one end of a piston to detect a position of the piston reciprocally moving up and down... an upper core having a length shorter than one half of the length of the first sensor coil plus the length of the second sensor coil; and a lower core being spaced from the upper core by a predetermined distance, the lower core

having a length shorter than one half of the length of the first sensor coil plus the length of the second sensor coil." Support for this amendment may be found in at least original claim 2. As noted in the Office Action, Shimizu discusses that the length of each coil is substantially equal to the length of each magnetic ring 21b. See Shimizu, 6:10-6:11 and Figure 4. However, in contrast to claim 1, Shimizu discusses a plurality of magnetic rings 21b rather than a single core having an upper and lower core as recited in claim 1. Further, if the magnetic rings 21b needed for the four phase arrangement of Shimizu were added together under the stated criteria that a coil was equal to a magnetic ring, the magnetic rings 21b (corresponding to the upper and lower cores of claim 1) would have a longer length than the coil length. By contrast, claim 1 recites that both the upper and lower cores have a length shorter than one half of the length of the first sensor coil plus the length of the second sensor coil.

This technical feature of claim 1 allows the linear compressor to compensate for external environmental factors such as a temperature and a pressure.

Claim 2 has been cancelled. Claim 3 is dependent on claim 1 and is therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is requested.

**Claims 15, 18 and 19**

Claims 15, 18 and 19 have been cancelled.

**CONCLUSION**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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